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### Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

## Listing of Claims:

#### 1-23. (Canceled)

- 24. (Currently Amended) An isolated polypeptide the amino acid sequence of which comprises a sequence at least 70% 95% percent identical to the amino acid sequence of SEQ ID NO: 2, wherein the polypeptide is a (R)-2,3-butanediol dehydrogenase that:
- (a) produces (R)-acetoin by acting on (2R,3R)-2,3-butanediol using nicotinamide adenine dinucleotide as a coenzyme and produces (2R,3R)-2,3-butanediol by reducing 2,3-butanedione using a reduced form of nicotinamide adenine dinucleotide as a coenzyme; and
  - (b) uses nicotinamide adenine dinucleotide as a coenzyme in an oxidation reaction;
- (c) uses a reduced form of nicotinamide adenine dinucleotide as a coenzyme in a reduction reaction; and
  - (d) preferentially oxidizes a hydroxyl group of 2,3-butanediol in (R) configuration.

## 25. (Canceled)

- 26. (Currently Amended) An isolated polypeptide encoded by a polynucleotide that is at least 80% 95% identical to a polynucleotide comprising the nucleotide sequence of SEQ ID NO: 1, wherein the polypeptide is a (R)-2,3-butanediol dehydrogenase that:
- (a) produces (R)-acetoin by acting on (2R,3R)-2,3-butanediol using nicotinamide adenine dinucleotide as a coenzyme and produces (2R,3R)-2,3-butanediol by reducing 2,3-butanedione using a reduced form of nicotinamide adenine dinucleotide as a coenzyme; and
  - (b) uses nicotinamide adenine dinucleotide as a coenzyme in an oxidation reaction;

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(c) uses a reduced form of nicotinamide adenine dinucleotide as a coenzyme in a reduction reaction; and

(d) preferentially oxidizes a hydroxyl group of 2,3-butanediol in (R) configuration.

# 27. (Canceled)

- 28. (Currently Amended) An isolated polypeptide, wherein the polypeptide is an (R)-2,3-butanediol dehydrogenase that:
- (a) produces (R)-acetoin by acting on (2R,3R)-2,3-butanediol using nicotinamide adenine dinucleotide as a coenzyme and produces (2R,3R)-2,3-butanediol by reducing 2,3-butanedione using <u>a</u> reduced form of nicotinamide adenine dinucleotide as a coenzyme;
  - (b) uses nicotinamide adenine dinucleotide as a coenzyme in an oxidation reaction;
- (c) uses a reduced form of nicotinamide adenine dinucleotide as a coenzyme in a reduction reaction;
  - (d) preferentially oxidizes a hydroxyl group of 2,3-butanediol in (R) configuration;
  - (e) has a specific activity of about 100 U/mg or higher when purified;
  - (f) has an optimal pH of 10 for a glycerol oxidation reaction; and
- (g) has a molecular weight of about 36,000 Da when determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis and about 76,000 Da when determined by gel filtration, and
  - (h) has the sequence of an enzyme naturally produced by Pichia angusta.

## 29-33.(Canceled)

34. (Previously Presented) An isolated polypeptide the amino acid sequence of which consists of SEQ ID NO:2.

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35. (Previously Presented) An isolated polypeptide the amino acid sequence of which comprises SEQ ID NO:2.

36. (Currently Amended) An isolated polypeptide the amino acid sequence of which comprises SEQ ID NO:2 with 0 to 50 10 conservative amino acid substitutions, wherein the polypeptide is a (R)-2,3-butanediol dehydrogenase.

37-50. (Canceled)

- 51. (New) A substantially pure polypeptide, the amino acid sequence of which comprises a sequence at least 95% percent identical to the amino acid sequence of SEQ ID NO: 2, wherein the polypeptide is a (R)-2,3-butanediol dehydrogenase that:
- (a) produces (R)-acetoin by acting on (2R,3R)-2,3-butanediol using nicotinamide adenine dinucleotide as a coenzyme and produces (2R,3R)-2,3-butanediol by reducing 2,3-butanedione using a reduced form of nicotinamide adenine dinucleotide as a coenzyme;
  - (b) uses nicotinamide adenine dinucleotide as a coenzyme in an oxidation reaction;
- (c) uses a reduced form of nicotinamide adenine dinucleotide as a coenzyme in a reduction reaction; and
  - (d) preferentially oxidizes a hydroxyl group of 2,3-butanediol in (R) configuration.
- 52. (New) A substantially pure polypeptide encoded by a polynucleotide that is at least 95% identical to a polynucleotide comprising the nucleotide sequence of SEQ ID NO: 1, wherein the polypeptide is a (R)-2,3-butanediol dehydrogenase that:
- (a) produces (R)-acetoin by acting on (2R,3R)-2,3-butanediol using nicotinamide adenine dinucleotide as a coenzyme and produces (2R,3R)-2,3-butanediol by reducing 2,3-butanedione using a reduced form of nicotinamide adenine dinucleotide as a coenzyme;
  - (b) uses nicotinamide adenine dinucleotide as a coenzyme in an oxidation reaction;

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(c) uses a reduced form of nicotinamide adenine dinucleotide as a coenzyme in a reduction reaction; and

- (d) preferentially oxidizes a hydroxyl group of 2,3-butanediol in (R) configuration.
- 53. (New) A substantially pure polypeptide, wherein the polypeptide is an (R)-2,3-butanediol dehydrogenase that:
- (a) produces (R)-acetoin by acting on (2R,3R)-2,3-butanediol using nicotinamide adenine dinucleotide as a coenzyme and produces (2R,3R)-2,3-butanediol by reducing 2,3-butanedione using a reduced form of nicotinamide adenine dinucleotide as a coenzyme;
  - (b) uses nicotinamide adenine dinucleotide as a coenzyme in an oxidation reaction;
- (c) uses a reduced form of nicotinamide adenine dinucleotide as a coenzyme in a reduction reaction;
  - (d) preferentially oxidizes a hydroxyl group of 2,3-butanediol in (R) configuration;
  - (e) has a specific activity of about 100 U/mg or higher when purified;
  - (f) has an optimal pH of 10 for a glycerol oxidation reaction;
- (g) has a molecular weight of about 36,000 Da when determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis and about 76,000 Da when determined by gel filtration, and
  - (h) has the sequence of an enzyme naturally produced by Pichia angusta.
- 54. (New) A substantially pure polypeptide, the amino acid sequence of which consists of SEQ ID NO:2.
- 55. (New) A substantially pure polypeptide, the amino acid sequence of which comprises SEQ ID NO:2.

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56. (New) A substantially pure polypeptide, the amino acid sequence of which comprises SEQ ID NO:2 with 0 to 10 conservative amino acid substitutions, wherein the polypeptide is a (R)-2,3-butanediol dehydrogenase.

- 57. (New) A method for producing an alcohol, the method comprising reacting the isolated polypeptide of claim 24 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 58. (New) A method for producing an alcohol, the method comprising reacting the isolated polypeptide of claim 26 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 59. (New) A method for producing an alcohol, the method comprising reacting the isolated polypeptide of claim 28 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 60. (New) A method for producing an alcohol, the method comprising reacting the isolated polypeptide of claim 34 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 61. (New) A method for producing an alcohol, the method comprising reacting the isolated polypeptide of claim 35 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.

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62. (New) A method for producing an alcohol, the method comprising reacting the isolated polypeptide of claim 36 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.

- 63. (New) A method for producing an alcohol, the method comprising reacting the substantially pure polypeptide of claim 51 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 64. (New) A method for producing an alcohol, the method comprising reacting the substantially pure polypeptide of claim 52 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 65. (New) A method for producing an alcohol, the method comprising reacting the substantially pure polypeptide of claim 53 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 66. (New) A method for producing an alcohol, the method comprising reacting the substantially pure polypeptide of claim 54 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.

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67. (New) A method for producing an alcohol, the method comprising reacting the substantially pure polypeptide of claim 55 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.

- 68. (New) A method for producing an alcohol, the method comprising reacting the substantially pure polypeptide of claim 56 with a ketone in the presence of a reduced form of nicotinamide adenine dinucleotide to generate an alcohol, and recovering the generated alcohol.
- 69. (New) The method of claim 57, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 70. (New) The method of claim 58, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 71. (New) The method of claim 59, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 72. (New) The method of claim 60, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 73. (New) The method of claim 61, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 74. (New) The method of claim 62, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.

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75. (New) The method of claim 63, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.

- 76. (New) The method of claim 64, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 77. (New) The method of claim 65, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 78. (New) The method of claim 66, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 79. (New) The method of claim 67, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.
- 80. (New) The method of claim 68, wherein the ketone is 2,3-butanedione and the alcohol is (2R,3R)-2,3-butanediol.